ECONOMIC AND SOCIAL RESEARCH FOUNDATION

THE DEBT CRISIS IN LEAST DEVELOPING COUNTRIES (LDCs): A THEORETICAL NOTE

By Haji H H Semboja

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LIST OF ABBREVIATIONS

GDP - Gross Domestic Product
GNP - Gross National Product
IMF - International Monetary Fund
LDCs - Least Developing Countries
NATO - Northern Atlantic Treaty Organization
OECD - Organization for Economic Cooperation and Development
OPEC - Organization of Petroleum Exporting Countries
Sida - Swedish International Development Cooperation Agency
SSA - Sub-Saharan Africa
UN - United Nations

1.0 INTRODUCTION

In the mid-1980s, the deteriorating financial situation in a number of Least Developing Countries, (LDCs), which were also the majority borrowers in international private capital markets, reached its critical climax. That was when, unable to continue to repay their debts, these debtor countries encountered severe credit constraints. This debt crisis situation is indicated by a number of statistical debt measures (see the appendix for an exposé on the debt burden). As their debts increased, the ratio of the debt to the debt servicing abilities of developing countries deteriorated, particularly after 1973/74. From 14 percent in 1970, the debt to the GNP ratio more than doubled to its highest level (39.6 percent) in 1987. Thereafter, it started to decline, reaching 33.2 percent in 1990 before rising to 37.7 percent in 1995. The ratio of debt service to exports rose from 14.7 percent in 1970 to 23.7 percent in 1987 and thereafter declined to 18.3 percent in 1990 and reached 16.3 percent in 1995. The interest payment on debt as a percentage of exports increased from five percent in 1970 to 10.3 percent in 1987 and thereafter declined to about 7.3 percent in 1995.

These statistics suggest that although the situation in the 1990s has changed, there are still 32 (out of 54 LDCs) Severely Indebted Low Income Countries (SILICs) to which Tanzania belongs. The current debt problem of these SILICs is primarily that of a debt overhang rather than a cash flow, that is, they have high stocks of outstanding debts (and scheduled debt-servicing) requirements but generally continue to receive large positive transfers at highly concessional terms from external creditors which by far exceed the actual debt servicing payments.

The worsening of debt crisis conditions brought about an international reconsideration of the indebted developing countries, leading to general economic reforms in the 1980s-1990s and a number of specific multilateral debt solutions. Latter efforts included:

(i) *ad-hoc* financing arrangements;
(ii) case by case debt rescheduling;
(iii) interest capitalization schemes;
(iv) formal insurance;
(v) stabilization funds;
(vi) innovative instruments (including equity shares in the public enterprises of borrowing countries) as swaps with outstanding debt; and
(vii) a comprehensive restructuring.

The objective of these solutions was to permit the ressumption of economic growth and the restoration of the creditworthiness of developing countries and spontaneous lending arrangements with international commercial banks (WDR, 1988). It is unfortunate that, despite all these efforts, there have been no substantial changes in the fundamental problems besetting the severely indebted countries.

There were also other specific factors that complicated the debt crisis during the 1970s and 1980s.

These included:

(i) the existence of higher interest rates;
(ii) weak commodity prices;
(iii) unstable oil prices;
(iv) a continuous rise in the prices of manufactured and capital goods;
(v) restrictive trade barriers;
(vi) drought; and
(vii) the persistence of inappropriate public investments policies in debtor countries.

This note argues that the present situation (the debt crisis) in developing countries is still sensitive and can be connected, with regard to economic development, to the expansion that has already been experienced among the rich industrialized countries and the poverty in developing countries (Dornbusch 1983, Sander and Dean 1988, and Pinies, 1989). This note indicates that it is necessary for both the debtors and creditors to participate cooperatively in solving these problems for the best of all. A lasting solution to the debt problem will require both continued commitment to debt policy reforms in developing countries and concerted efforts on the part of the creditors in solving this problem.

This is an attempt to discuss the origins, mechanisms and solutions of the debt crisis in developing countries from a long term economic perspective. The debt crisis phenomenon is a complex function of international economic development processes by which the movement of capital resources over time and across nations operates under restrictive conditions and an uncertain environment. This analysis shall establish linkages between the debt crisis conditions and the process of economic development as they occur in developing countries.

This compact theoretical note shall not provide a critique to the models or assumptions maintained in debt crisis discussions. For a systematic discussion the paper is divided into five parts. Part one is the introduction; while part two discusses the role, condition and origins of foreign debt in developing countries in general and in Tanzania in particular. Part three presents a debt crisis model that explains the debt mechanism. In part four, the debt solution proposed is examined using game theory. Part five presents a conclusion and the policy implications of the debt crisis.

2.0 THE ROLE, CONDITION AND ORIGINS OF FOREIGN DEBT

2.1 The Role of Foreign Debt

This analysis only deals with external debt. External loans permit the import of real resources, thereby enabling national governments to provide additional facilities without an immediate reduction of resources for other consumption or capital formation uses (Musgave, 1959). In other words, the realization of "opportunity cost" is postponed until later**C**when the debt is being serviced and repaid**C**thus giving rise to an outflow of resources at that time.

It is common to assume that only national governments can borrow from abroad and that domestic private institutions do so via national governments or central banks. In borrowing from outside, national governments represent the interests of both present and future generations.

Foreign borrowing from abroad (especially if put to unproductive use), not only results in a burdensome drain and the restrictive utilization of resources in subsequent periods (when the debt must be serviced), but may also give rise to difficulties in the balance of payments.

It can be said that if utilized to secure economic growth, foreign borrowing will create the export capacity necessary to service the debt at a future date. The long term basic planning strategy is for the external debt to permit capital formation without reducing the current level of consumption which, in many poor developing countries, may be close to subsistence standards.

The external debt can be used to provide the foreign exchange needed for the limiting inputs which cannot be secured in the home country such as:

(i) capital equipment;
(ii) technology services; and
(iii) expertise services.

Foreign borrowing or other forms of capital imports are vital in the early stages of economic development of most politically-independent countries.

In any context, debt is not a problem if the following exist in the debt market:[1]

(i) smooth rendering and repayments procedures;

[1]. See Hughes, H. 1979.

(ii) a clear understanding of debt principles and practices;
(iii) a clear rationale; and
(iv) co-operating economic units in the debt market.

2.2 Debt Market Conditions

In the literature dealing with debt management, there is a tendency to assume the existence of a perfectly competitive debt market (WDR, 1985 and 1988, and Pinies, 1988). It is assumed that there are many countries which demand for debt. These are the current indebted countries in the developing world. It is also assumed that there are creditor countries which in most cases are industrialized countries in the developed world. Borrowers compete for funds and lenders compete for sound clients. National governments and multilateral financial institutions act on behalf of these debtors and creditors. International financial institutions such as the International Monetary Fund (IMF), the World Bank, the Organization of Petroleum Exporting Countries (OPEC), NORDIC which belongs to the Nordic Countries, EUROMARKET (a European market organization), and the Organization for Economic Cooperation and Development (OECD) participate on one or both sides.

In this market, the world is considered as one and the same to all. The assumption is that all these participants have perfect knowledge and information on everything. It is assumed that all economic units are rational and that each, in interaction and over time, aims at maximizing the discounted social welfare of its people. In this context, if a debt crisis occurs, this must be considered an international issue whereby both partners must bear the consequences. If this is not what occurs, then this implies that there must have been some imperfections. Given this line of thinking, one notices that within a setting of perfect debt market conditions, at the equilibrium, the amount of debt to be transferred is a function of exogenous factors which are outlined as:

(i) market interest rates, or real long-term interest rate on the dollar-denominated external debt (*r);*
(ii) the price of commodities produced in developing countries *(P);*
(iii) the income of the debtor, the *GDP* or export revenues;
(iv) price of capital and manufactured industrial goods produced in developed countries *(Q)* ,
(v) rate of foreign exchange dictated by the US dollar or Special Drawing Rights /SDR, *(E),* and
(vi) the wealth of creditor countries, *(W).*

In other words, the debt market function demand, is directly related to the market interest rate, export revenues, the GDP of the debtor nation, the prices of commodities; the prices of imports (capital and manufactured goods from the developed countries); the exchange rate; and the wealth of the creditor nation.

It is possible to formalize this debt market demand function *D(t),* as follows:

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On the basis of past experience one can

postulate that the direction of change of debt demand *D(t)* given the changes of one of exogenous factors other factors remain constant (WDR, 1988 and SIDA, 1989). The classical international capital market theory reveals that the demand for loans (debt) is negatively correlated to the interest rate *r* and positively related to income, the *GDP*. Higher interest rates and lower income possibilities lead to a lower demand for debt. Lower commodity prices lead to lower export earnings and income; and hence a lower the demand for debt. The effects of the price of capital, the foreign exchange rate and the wealth of creditors on the willingness of the latter to provide loans are indeterminant and have an effect on debts via the market interest rate, the price of commodities and the export earnings of debtor countries. Previous tendencies in the 1980s to 1990s have shown that these factors {the price of foreign goods, *Q*, the exchange rate, *E*, and the wealth of the creditor country, *W*) negatively affect the *GDP and export earnings* of these countries. This theoretical model is a reminder that it is the effective demand (*r, P, GDP,* etc) and not the need *per se* (e.g., hunger or natural calamities) which have the least say in determining debt transactions. In fact, some studies (Saunders and Dean, 1988) have shown that interlinkages exist between the increasing wealth in the OECD and the rising level of debtedness among developing countries.

2.2.1 Factors determining the smooth serving of debt

Let us discuss the factors which determine the smooth servicing and repayment of loans.

First and foremost are the terms under which debt is initially incurred (as per the relationship stipulated in equation 1.1). These include[2] the:

(i) interest charged on foreign borrowing;
(ii) maturity, and cash flow profiles;
(iii) currencies in which liabilities are denominated;
(iv) risk-sharing between debt and equity; and
(v) the level and composition of country reserves.

The second factor is the objectivity of the borrowed capital which also depends on the initial factors determining the absorptive capacities of debtor countries, such as:

(i) its level of technological development;
(ii) its institutional capacities;
(iii) the legal framework;
(iv) the domestic resources available; and
(v) the country's level of political maturity.

The third factor is the external environment which the borrowing countries have to face during the repayment period. The rendering and repayment of debts becomes a complex function of factors many of which are

[2]. see WDR, 1988.

beyond the control of debtor countries. Yet, despite its limitations becoming indebted has been necessary throughout the history of human development. Unsurprisingly, therefore, many developing countries became indebted in different ways during the 1960s and 1980s.

2.3 Origins of the Debt Crisis

Current discussions on the debt crisis concentrate on the history of debt developments from the 1960s to the 1990s (Kathie, 1985 and WDR, 1988). However, one could trace the origins of the debt crisis to the period immediately after many developing countries obtained their flag**C**political independence. During the 1960s and 1970s, the size of foreign debt in many developing countries was manageable. In revisiting the debt crisis in the 1980s, with external debts in mind, different explanations have been given, based on specific factors which accelerated the debt crisis in LDCs.
These factors are outlined as follows:

- < transitory higher commodity prices and booms, leading to increased foreign income revenues;
- < expanded accessibility to private finance and other trade/credit facilities. This implied open international capital markets for all participants in the development projects; and
- < expensive public expenditure programmes in debt developing countries.

We now attempt to be specific and to also elaborate some few points connected to the above historical debt issues. While it is true that the external sector contributed to the crisis in Tanzania, domestic policies pursued by the government had a deleterious effect on the economy, which made it difficult for the economy to absorb subsequent shocks from the external sector. Like all other severely-indebted developing countries, Tanzania's external debt problem is a complex function of both internal and external factors including:

(i) expansionary fiscal and monetary policies to finance the public sector;
(ii) slumps in commodity prices;
(iii) rises in the real interest rates in the financial markets;
(iv) the collapse of the East African Community in 1977;
(v) the oil shocks of the 1970s; and
(vi) the Iddi Amin War of 1978.

Basically, most of the policies that were pursued contributed to an excessive growth of aggregate demand from the public sector which was not matched by increased production.

The objective of increasing public expenditure is not an unwarranted element *per se*. The increasing public debt becomes more problematic *if* it does not lead to economic development which then becomes

accompanied by other macro-disequilibrium aspects (e.g. a deficit current account, high inflation and unemployment).

Among the objectives of any modern developing economy is the expansion of the public sector as a form by which social, educational, health and other public services can be increased, made more equitable **C** and more efficient. In fact, public services are very important to the development of society **C** now and in the future. However, reliance on the public sector for a country's development has not only led to indebtedness but has also restricted economic growth in the nations concerned. From the late sixties to the late eighties, economic development in Tanzania, for example, had been hampered by policies which emphasized the expansion of parastatal firms in a tightly-controlled policy environment characterized by highly indebted firms and soft budget facility constraints. As a result, the majority of parastatal firms have been overburdened with debt. Under-capitalization, outmoded production technologies and an uncompetitive environment contributed substantially to this state of affairs.[3]

The basic long-term development perspective is that there must be a balanced development of the public sector such that its growth, over time, should not be a burden to the development of private enterprise. It is also important to identify the kind of non-productive consumption (e.g. luxurious consumer goods, first class air tickets and luxurious four wheel motor vehicles) which goes to a minority (rich) class/government bureaucracy met by the tax payer's money. There is an increasing tendency for non-productive and *parasitic* government consumption which in many cases complicates the balance of payments and thus distorts the whole idea of "public sector expenditure".

2.3.1 Debt Crisis Cases

Let us now attempt to identify countries which have been affected by debt crises with the help of an aggregative case by case method. The aggregative case by case method involves breaking down debtor

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[3]. This has been the result of one or a number of the following factors in combination: adverse foreign exchange movements in respect of foreign denominated debt obligations of the principal loan and the interest accrued; a high inflation rate/devaluation, fundamental initial errors in the location of development projects; product choices etc. which put a low ceiling on performance; there is also the issue of ineffectiveness in controlling costs on the part of the management; the problem of collecting receivables or developing markets (resulting in limited sales); and problems emanating from the fact that the macro-economic and policy environment is changing.

nations into specific groups. In various debt studies (Saunders and Dean, 1988) debtor developing countries can be split into two different ways *vis-à-vis* the following criteria:

- a country's financial position with regard to its rescheduled or non-rescheduled debt over a specific period (say 1980 to 1988); and

- trade structures with regard to energy (i.e., whether a country is a net oil-exporter or net oil-importer).

The above criteria can be extended to include other dimensions (such as a country's political system, the initial human resources and natural resource endowments). For the sake of simplicity, let us concentrate on the criteria listed above. The financial criterion is whether the country has rescheduled or defaulted on a large part of its debt during a certain period. Countries which have done so are classified as problem or unstable debtors. Those which did not are classified as stable debtors. The trade criterion splits countries between those which earned more than half of their export revenues from selling crude oil and/or gas abroad during this period, that is, oil-exporting debtor countries; the other group consists of countries with a diversified export-based economy; that is, non-oil debtor countries. The complete matrix of debt groupings is presented in Table 1 below.

Table 1: The Debt Crisis Matrix

	Trade Structures		
Financial Status		Net Oil Exports	Net Oil Importers
	Stable	D (1,1) (e.g. Cameroon)	D (1,2) (e.g. Botswana, Cape Verde, Djibouti, Mauritius, Seychelles, Swaziland and Zimbabwe)
	Unstable	D (2,1) (e.g. Burundi, Lesotho, Malawi, Rwanda)	D (2,2) (All SSA countries except Botswana, Burundi, Cameroon, Cape Verde, Djibouti, Mauritius, Seychelles, Swaziland and Zimbabwe)

On the basis of above matrix it is noted that, for example, by 1988, countries could be categorized as follows:

(i) D(1,1): the Stable, Oil-Exporting Debtor Countries (e.g. included Algeria and Indonesia);

(ii) D(1,2): the Stable, Oil-Importing Debtor Countries (e.g. included South Korea, Malaysia, and Thailand);

(iii) D(2,1): the Unstable, Oil-Exporting Debtor Countries (e.g. included Mexico, Nigeria, Venezuela); and

(iv) D(2,2): the Unstable Oil-Importing Debtor Countries (e.g. included Argentina, Brazil, Philippine and Chile).

Various points must be emphasized with regard to the above debt country groupings in Table 1. The sizes of the groups change from time to time *vis-à-vis* the conditions of the world's economic development. Countries can shift from one group to another. Between 1980 to 1988, only 12 of the 44 countries in Sub-Saharan Africa (SSA), accounting for 13 percent of the region's total debt have been able to service their debt without seeking rescheduling or falling into arrears. These included Cameroon, a D(1,1) country, and small middle income countries belonging to the D (1,2) category**C**Botswana, Cape Verde, Djibouti, Mauritius, Seychelles, Swaziland, and Zimbabwe, while others came from four low income countries belonging to the D(2,1) group**C**namely Burundi, Lesotho, Malawi and Rwanda. The rest of SSA falls under category D(2,2). By 1989, only two African countries were clearly creditworthy; these were Cameroon of the D(1,1) group, and Botswana of the D(1,2) group. Although there have been significant improvements, the debt situation has not changed.

Tables and Figures A.1-A.9 in the Appendix show that the period between 1986-88 marked the climax of the debt crisis. Thereafter, there were signs of economic recovery. The ratio of debt servicing to exports declined from 18.3 percent in 1990 to 16.3 percent in 1995. Interest payments on debt as a percentage of exports declined from 10.3 percent in 1987 to about 7.3 percent in 1995. However, 32 out of 54 low income countries were classified as severely-indebted countries. Figures show that although Tanzania is recovering, it is still remains among the severely indebted low income countries. These statistics suggest that the current debt problem of these SILICs is primarily one of a debt overhang rather than of cash flow, that is, they have high outstanding debts and scheduled debt servicing requirements but generally continue to receive large positive transfers at highly concessional terms from external creditors which are far in excess of the actual debt servicing payments.

The existence of high levels of external debt constitutes a burden to the present society as a whole since resources must be surrendered in servicing it. The taxpayers (i.e. the peasants, workers, the business community, industrialists and others) would be better off if the debt was cancelled. However, it is also possible that the present generation is better due to past borrowing. In this way, gains from productive investments of resources in the past may more than pay for the servicing of debts. The fact that past debt-financed imports were not directly connected to productive activities has exacerbated the present generation's debt-servicing problems. In this respect, one may view external debt as a means by which resources between generations can be transferred *with or without* achieving economic development.

3.0 THE DEBT CRISIS MODEL

3.1 The Model's Basic Assumptions

The main model to be presented in this paper is a simple growth model based on the Harrod-Domar thinking and neo-classical production structures. It is a macro-economic model based on the growth mechanism in an economy where capital is a limiting factor of production[4]. The model takes into consideration a number of factors determining the demand for and the use of debt. The debt burden model will be characterized by the following properties or assumed conditions:

(1) There is only one limiting factor of production**C** capital (*K*). Capital can be utilized to produce output or national income (*Y*). The implied national income identity states that at equilibrium, the total national income *(Y)* can be used for investment; private consumption (*Cp*); public expenditure on goods and services (*G*); and foreign trade (*F*).

(2) Production is the only human activity which enables society to pay its debt and develop.

(3) Total domestic savings (*S*) are constant and proportional to the national income.

(4) The government (through the joint ventures) as well as the private sector can engage in efficient and competitive productive activities. In addition, there are no internal debt management problems.

(5) The existence of debt within the economy as one form of importing capital from abroad. Foreign debt transactions incorporate the element of an open economy, that is, the model can be treated as an open economy model.

(6) External capital is acquired in order to supplement domestic savings available for investments so as to increase the economic potential and raise the living standards.

(7) Long term borrowing is invested in highly productive projects or operational expenditures in a well managed economy at an interest rate which is reasonably low.

3.2 A Definition of Symbols

3.2.1 Defining the variables

[4]. From lecture notes and discussions with Professors Leif Johansen, Jan Serck Hansen and others at the Department of Economics, University of Oslo, 1983/84-1987/89.

(i) The national income or production at time t is defined by
$Y = Y(t)$;
(iii) Total savings (exclusive of interest payments) at time t, are defined by
$S = S(t)$;
(iii) Total stock of capital at time t, is defined by
$K = K(t)$;
(iv) Net wealth (if positive), or net debt (if negative) at time t, is defined by
$W = W(t)$.

3.2.2 Defining the coefficients

(i) g = the rate of growth of national income;
(ii) a = the fabrication coefficient/the technical coefficient;[5]
(iii) s = the savings rate;
(iv) r = the real long-term interest rate on the dollar-denominated external debt;[6] and
(v) $w(t)$ = the debt-income ratio.

3.3 Basic Model Relations

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[5]. This refers to a constant obtained from the technical relationship between output and capital.

[6]. The secondary market price of commercial bank credit is a useful measure of a country creditworthiness. It indicates the climate for private capital inflows to a debtor country, because it reflects the expectations of both the private investor's expectations concerning the ability of debtor governments to service the existing debts, and yields on alternative international investments.

The dynamic variables are defined as follows:

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The above five equations constitute a simple debt model which determines the five endogenous variables *Y, K, W, S* and *w*. According to mathematical rules, this debt model is determined and remains consistent.

The first relation E (1) defines the savings function (*S*). Total domestic savings are a constant proportion (or proportions) of the national income (*Y*). The constant savings parameter is assumed to be positive. In this presentation, *(s)* is referred to as the rate of savings.

The second equation E (2) specifies the growth rate of the national income. It is assumed that the national income grows at a constant rate, *g*, over time. On the basis of the above expression (**) it is noted that the left-hand side is the proportional rate of growth of the national income over time. The solution for the time path in terms of *g* and *t* can be shown to be (Sydster, 1987):

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where *Yo* is the value of *Y* at some arbitrary time *t=0*.

The third relation, E (3), is a debt-savings identity and can be broken down into two components. The right-hand side can be considered to be an approximation of the net effective savings and is the summation of the domestic savings and the interest on debt payments. This net effective savings can be utilized for real capital and financial capital allocations. Depending on the initial economic situation, a positive *W (t)* implies an increase in wealth claims abroad, or that some of the debt repayments decrease. This point will be elaborated further as the analysis proceeds.

The fourth equation, E(4), defines a debt-ratio variable *w(t)*. This is the same as to say that debt (or wealth) is a function of the proportion of the national product. In many studies (WDR 1985 and Holsea 1979), this debt-income ratio has been used as a debt crisis indicator. An alternative formulation of the above equation E(4) is:

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The last relation in the above model, E(5), summarizes the national production structure. The production of output, *Y,* is a function of capital at time *t*. Capital *K(t)* is assumed to be the limiting factor. This model implicitly assumes that there are other important factors of production such as labour power, land, raw materials, and energy. Let us, for the sake of simplicity, consider only the most limiting factor of production in the case of a developing economy. In this context, we may assume that other factors vary efficiently with variations in capital.

3.4 Model Equilibrium Solution

The five equations above, E(1) to E(5), present a dynamic model which determines five endogenous variables *Y, K, S, W,* and *w*. If the model has one or more solutions, these will be defined as a function of time element *(t)*. In this connection, it will be of special interest to examine how the model behaves at equilibrium.

The solutions emanating from the model will be characterized by endogenous variables that are defined as a function of the exogenous variables and which grow with the same constant rate over time.

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On the basis of the model's assumptions and discussions *vis-à-vis* indebted economies, it is now easy to construct some qualitative features of the model in relation to the debt burden at equilibrium.

Let us take a total derivative of *w(t)* with respect to the time element, *t*.

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Upon rearranging equation E (3), we obtain the following expression:

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on substituting the above results with *w(t)* we obtain:

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Now, taking into account the value definitions of the above equations E(1) to E(5) and substituting them into the last results E(9) we get:

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which we can rearrange to obtain the required debt burden solution:

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The above solution E(10) is a differential equation with $w(t)$ as the only endogenous variable. The relation explains that the change of $w(t)$ at every point in time is equal to the difference between s and $\{w(t)(g - r) + g/a\}$.

The development of the debt burden at any particular point in time is a function of the rate of savings, (s), the rate of growth of the national income (g), the market interest rate, (r) and the fabrication coefficient (a).

The general time path for the debt burden and an exposition of the corresponding qualitative features of model solution E(10) can be illustrated with the help of a phase diagram $\{s, w\}$.

At the stationary equilibrium point, we thus have

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This implies that for

At the stationary equilibrium point, the growth rate of the debt burden is zero when savings rates are equal to the debt burden times the difference between the rate of growth of national income and the market interest rate.

The following specific implications emerge

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At the same time, increasing þ means that the debt-income ratio decreases or that, over time, the proportion of wealth accumulated abroad increases depending on the country's initial economic position.

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Decreasing þ also means that, over time, the debt-income ratio increases, or the proportion of wealth accumulated in foreign countries decreases depending on the country's initial economic position.

Figure 3: A Stable Debt Path

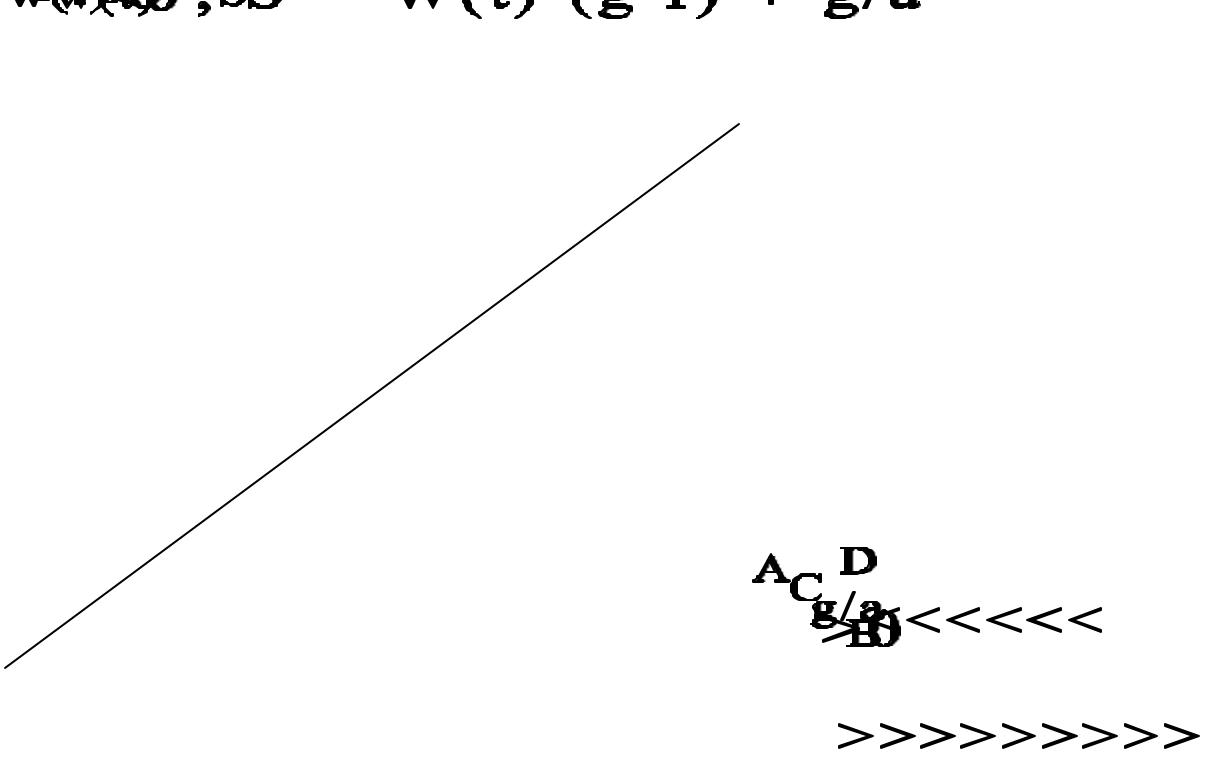

Figure 3 shows the movement of the debt burden over time (curve þ = 0).

This is when $s = w(t)(g - r) + g/a$. The curve is drawn in a *(s, w)* phase diagram. Along the horizontal axis are the theoretical values of the rate of savings and along the vertical axis are the theoretical values for the debt burden variable *w(t).* On the right-hand side are the positive values for *w(t)* which indicate that a country has positive net claims, or wealth abroad. On the left-hand side of vertical axis are the negative values for *w(t)* which indicate the existence of debt.

The curve $\dot{w} = 0$ describes the equilibrium debt path. It shows the combinations of the savings rate, *s,* and the debt-income ratio, *w(t)* which gives the development of the debt/wealth ratio at a constant rate. We note that at $\dot{w} = 0$, the savings rate, *s*, can be defined as a linear function of the debt burden variable *w(t)*

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It is noted that:

- g/a = positive constant term that is an intercept point of the (s) axis, and

- $(g - r)$ = the coefficient of relationship between the rate of savings, (s), and debt burden variable (w). This is a tangent co-efficient or the slope of the curve. The slope will always depend on relationship between the rate growth of the national economic, g, and the market interest rate, r.

Figure 3 is a special case **C** when at the initial point in time of the country's economic development (and debt path) is characterized by a rate of growth higher than the market interest rate.

For a "g" greater than "r", a positive slope or tangent coefficient is obtained, indicating that there is a positive relationship between the rate of savings and the debt/wealth (income) ratio variable. The above curve $\dot{w} = 0$ has a positive slope and a positive constant term intercepting the [s] axis at g/a. Along the curve the condition $\dot{w} = 0$ is reached. Above the curve, $\dot{w}$ is greater than zero and below the curve $\dot{w}$ is less than zero.

What are the conditions for the stability of this debt burden (at equilibrium) based on this solution? Assuming that the country's economy initially is at point A, since $w(t)$ assumes a negative value, at point A, the country has a substantial amount of debt. However, at point A the economy lies above the curve $\dot{w}$ indicating that, over time, the debt burden is decreasing. If the rate of savings remains constant and other factors remain fixed, the economy will gradually move towards point B. When the economy is at point B the rate of savings will equal the value of the debt-income ratio times the difference between the national income growth rate and the market interest rate.

Let us consider point C as a developing economy's other possible initial economic position. At this point, the country has positive debt-income values. This implies that the country has net positive wealth claims abroad. It is noted that at point C, the country experiences a negative rate of growth *vis-a-vis* its debt-income ratio. This point lies below the curve $\dot{w} = 0$. If the rate of savings remains constant over time, the net wealth claims abroad will decrease. This will lead to movement towards smooth adjustment (towards point D). Under this special case, points along the curve $\dot{w} = 0$ are stable equilibrium points.

On the basis of the above discussion Figure 3, it can be deduced that, given a reasonable savings rate, any developing country will gradually adjust towards the stable equilibrium point if its national growth rate exceeds the international market interest rate, especially if at this initial point in time there is a substantial amount of debt in its economy. If the country has political and economic desires, it can disintegrate itself from its debt problems, in which case, the debt burden is manageable and there is no economic crisis. One may argue that countries belonging to groups D(1,1) or D(1,2) are located around economy point A or point B in figure 1. In the 1970s, a few D(1,1) and D(1,2) developing countries were located around the economy point B.

If the country manages to keep its debt-income or debt-export ratio on a declining trend, it will be able to repay its debts and should remain creditworthy (Pinies, 1988). Severe credit rationing after 1989/90, imposed on debtor developing countries, according to fundamental debt dynamics, is not warranted. These countries could have borrowed substantially more than they did in the past and remain solvent. They could have imported productive capital significantly more than they did and still remained with ample capacity to repay their debt.

The excess import restraint which has been imposed on many debtor developing countries have been forced into, most seriously threatens their ultimate production capacities and hence, their willingness to pay. Creditors, particularly in international commercial banks, have shown uncooperative and irrational behaviour with regard to this debt market (Pinies, 1988).

Figure 4: Unstable Debt Path

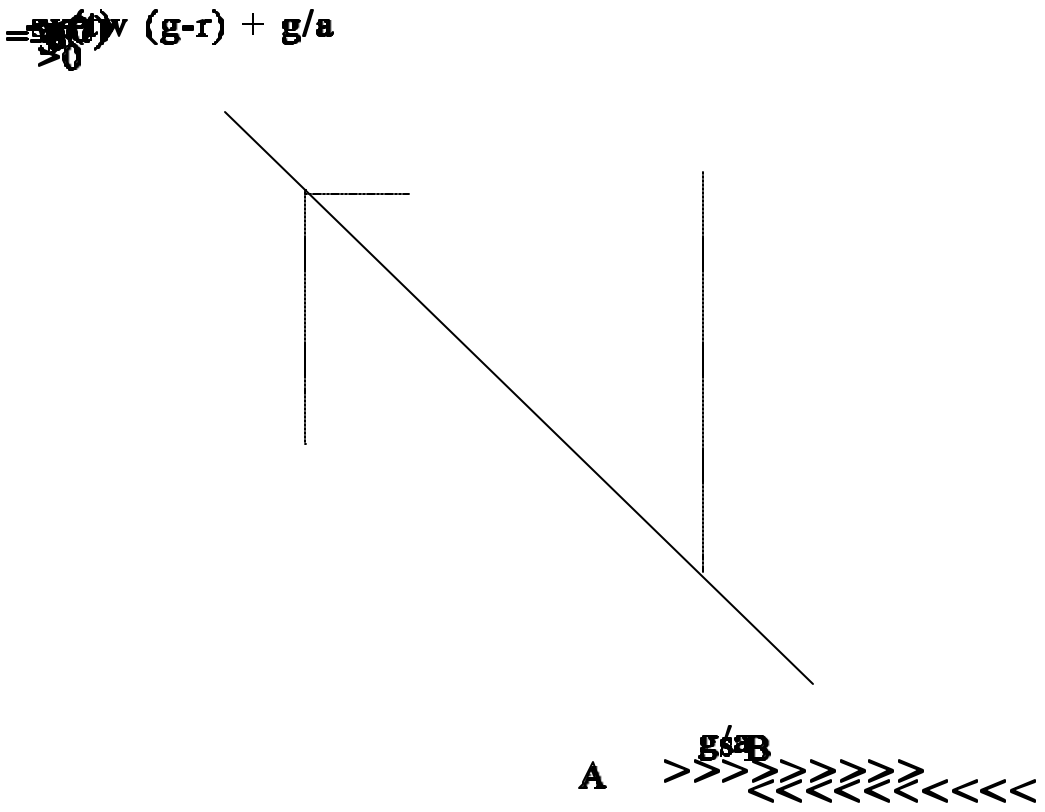

Figure 4 above, explains a possible case where and how debt can become a burden. This is a situation where the development of the debt path over time is unstable. It is generally known that the economies of many developing countries with debt problems are characterized by growth rate levels (of national incomes) which are low. In addition, they face relatively high interest rates (SIDA, 1988). Figure 4 shows a situation where the rate of growth of the national income is lower than the market interest rate, that is, when *g* is less than *r*.

For $r < g$ it implies that the curve $\dot{b} = 0$; thus line $s = w(t)(g - r) + g/a$ will have a negative slope. That is, there is a negative relationship between s and $w(t)$. Note that along the curve $\dot{b} = 0$, the development of the debt-income ratio is constant over time. Above the curve $\dot{b}$ is greater than zero and below the curve $\dot{b}$ is less than zero. Simple dynamic economic theory reveals that any point outside the curve $\dot{b} = 0$ is unstable (Sydster, 1987). If the rate of savings, *s*, remains constant, given that the initial point is outside the equilibrium position, the economy will explode to either negative infinity (the typical case of increasing debts), or positive infinity (a typical case of exploding national wealth as in the case of OECD countries).

A typical non-oil-producing and lower-income developing country, D(2,2) may find itself encroached (point A in Figure 4). Economic point A lies below curve $\dot{b} = 0$, that is, it has a rate of growth of debt-income ratio which increases over time. Initially, point A has also a considerable amount of debt. If the rate of savings remains constant, (at economy point A) because of lower economic growth, the country will not

be able to service its debt. This will worsen the debt situation and create permanent debt problems. The economy will move towards negative infinity, more debt will accumulate and a debt crisis will be created.

According to Figure 4, even if the country at the initial point did not have debt that is þ = 0, it is noted that since savings are lower than *g/a*, this will, in the final analysis, force the country to enter into debt schemes. Many poor countries may enter into debt schemes since savings do not cover the domestically required investments (Hughes, 1979). Again, these debt schemes will eventually lead to accumulated debts and hence, a debt crisis. At point A in figure 4, indebted D(2,2) countries (e.g. Tanzania), do not have the possibility of servicing their financial debt obligations over time, thus, their economic growth is restrained.

Install Equation Editor and double-click here to view equation.

Let us examine the conditions stipulated at point B in Figure 4. At point B, we have *w(t)* greater than zero, and a considerable amount of positive *w(t)* values; that is, wealth claims abroad. These are typical features of some of industrialized, creditor countries within the OECD. These industrial countries (Sander and Dean, 1988) have relatively higher rates of savings *(s)*, and the rate of growth *(g)* has stagnated for obvious reasons (e.g. the lack of an effective demand for industrial goods). At economy point B, the market interest rate *(r)* is higher than the national growth rate *(g)*. Given the dynamic mechanism of the model, it can be noted that if the rate of savings remains constant and other factors remain fixed, then the economy will always move towards positive infinite wealth (Dornbusch, 1983). At point B, the net wealth *W(t)* of these countries accumulates over time.

While the majority of heavily indebted countries discussed in Figure 3 are emerging successfully from the debt crisis, most of the severely indebted countries (discussed in Figure 4) still find themselves in difficult economic circumstances and with poor prospects of attaining sustainable economic growth.

On the basis of this presentation, it can be deduced that the debt crisis is a function of both internal and external conditions. It is possible to develop a simple accounting model which links debt developing countries to economic growth in the OECD, as well as prices, interest rates and other key variables (Saunders and Dean, 1988). The financial situation of the heavily indebted developing countries is closely linked to economic development in the OECD although development within the LDCs is also critically responsible for the situation {i.e., internal economic mechanisms also contribute to rising external debts}.

Thus, in a nutshell the current account of developing countries is affected by:

(i) the OECD demand for imports;
(ii) the prices of capital and traded goods;
(iii) exchange rates; and
(iv) interest rates.

In turn, these factors determine the asset and debt stocks and ultimately, the amount of financing flows.

4.0 DEBT SOLUTION: GAME THEORY IN USE

The above debt crisis model has a number of implications. The first implication is the strategic interlinkages and the direction of the debt path over time. The second implication is the management of debt problems within the LDCs. This model implies the existence of a dual relationship between increasing debt and (hence) poverty in developing countries, and increasing financial wealth (saturated economic growth) in the developed industrialized creditor countries. Given the variation in the severity of debt and the debt servicing burden, differences in the profile and the creditor composition of debt, the level of political maturity and differences in economic performance, a solution to the debt problem needs to be designed to fit the circumstances of individual countries.

The ongoing negotiations on debt problems and management are also based on the similar concept that something must be done now, in the 1990s, for the benefit of all. This introduces a kind of extensive game which can be presented as a single-shoot debt negotiation game (Friedman, 1986). Based on the previous discussions of the model, the debt negotiation game is superimposed. The theoretical game is used to determine feasible strategic solutions in debt negotiations and management. It will be demonstrated that an optimal/pareto[7] solution can be attained only when both the creditors and debtors consider the debt issue in a long term perspective and behave cooperatively.

For simplicity, the debt negotiation game consists of two main players, namely; *the creditors* (i.e., the group of developed industrial countries, the World Bank, the IMF, NORDIC, and the OECD) and *the debtors* (i.e., the developing countries). There are rules of the game stipulated in international capital and commodity markets, the legal environment, laws of economic development and other debt principles. The basic assumption is that the players have perfect knowledge of and information on everything. It is maintained that players are rational economic units; and that, in debt negotiations, each acts to optimize the discounted international social welfare function.

It is supposed that in the 1990s, debtor countries in the developing world still have substantial debts {-*W(t)*} and lack indigenous capital *{K(t)}*. These debtor countries have two alternatives to choose from. The first choice is to service and pay back the outstanding debts immediately**C** with the sure belief that they will become more debted at the same time. The second alternative is not to service debt and/or not to pay back the outstanding debts. This choice can be rationalized by the fact that in the 1990s LDC countries have nothing, and can almost be considered as being bankrupt and that the petty cash trade strategy *(hand to mouth)* can be/is adopted when there is a severe financial crisis.

[7] Pareto is a term used to describe the optimal point.

Let us assume the existence of rich and powerful creditors (e.g. OECD and NATO) in the developed/industrialized world. These creditors are characterized by the following characteristics which threaten their social and political well-being:

(i) excess capital;
(ii) lack of an effective demand for their manufactured goods;
(iii) a limited growth rate of their national incomes;
(iv) a low inflation rate; and
(v) low levels of unemployment.

Creditor countries also have two alternatives. They can either continue to export capital via debt and other trade facilities to developing countries, or, they can stop providing credit (or impose severe restrictions/conditionalities on debt). The outcome of the negotiations depends not only on the extent to which debtors can or cannot service their debts, but also on the probablistic willingness of the debtor to pay back debt; this includes the behaviour of creditors (Kathie, 1985).

The outcome of negotiations or the equilibrium solution can be represented in the form of payoffs. When the external environment is unknown and uncertain, it is difficult to know the strategies; particularly when these debt negotiations are conducted simultaneously. The following (Table 2) is a possible strategic payoff bimatrix.

For the purpose of this debt negotiation game, the above arbitrary utility index-scale has been fixed. These utility index-scales range from -0.05 to 0.25 and will be understood as the discussion on the game proceeds. A negative index means there is transfer of resources from the present to future generations. There is also a movement of resources from one player to another, this being a long term strategy (i.e., with both players thinking of the future). In this case, all debt resources go to productive investment programmes. A zero index means that there is no transfer of resources and that no debt transactions take place**C**a standstill situation and an optimal punishment solution.

Table 2: The Debt Negotiations Game

PLAYER A CREDITORS			
		CONTINUE	STOP
PLAYER B	PAYBACK	-0.5, -1	0.25, 0.25

DEBTORS	NOT PAY	-0.05, -0.5	0.05, 0.05

If players decide to choose "PAYBACK, CONTINUE" strategy then it means debtors will repay outstanding interest payments and these resources will be transferred to creditor countries. Simultaneously, the creditors after evaluating present creditworthiness of debtors will transfer more capital resources to developing countries. These negative transfers mean the use of debt in productive investments for the purpose of obtaining maximum future discounted social wealth.

If players decide to choose the "NOT PAY, CONTINUE" strategy then debtors will transfer very little, both to creditors and future generations. They will trade on petty cash basis (on basic consumption commodities e.g. medicine and food). Creditors will attempt to complement by transferring only humanitarian aid relief, manufactured consumer goods, social services and the like.

If players decide to choose the "PAYBACK, STOP" strategy then it means debtor countries will continue to payback substantial amounts of resources i.e., they will transfer financial resources from developing countries to developed countries. Since these utility indices are positive, it implies that there will be no effect on the developing countries' future generations. Creditor countries will stop exporting capital to developing countries, and hence limit the growth of developing countries.
If players choose the "NOT PAY; STOP" strategy, then it means that each will reduce the transfer of resources over time and across nations. For their existence, debtor developing countries will have to transfer certain minimum resources for the purpose of meeting their basic consumption requirements. If players continue to opt for this strategy, both will lose sight of the long run economic development and the need for international solidarity.

The most pessimistic scenario is that of Nash**C** a non cooperative equilibrium solution the "NOT PAY, STOP" strategy. It is an non-cooperative basic strategy solution based on short sighted, individualistic "rational", time-independent behaviour. In this strategy, the historical past and present conditions do not necessarily determine future living conditions. If player B chooses "STOP" (i.e., no more rendering of loans), it then follows that it will be for in the best interest of player A to opt for the "NOT PAY" strategy. These are non-cooperative strategies which constitute the best response and which, when adopted, accelerate the debt crisis and the world's economic problems.

Let us now extend our "debt negotiations" game to insist on an intertemporal[8] time aspect. The role of debt is to distribute wealth over time, and from one generation to another; this implies that the present society sacrifices for the development of future generation. If both players have this viewpoint and they play a cooperative game, we obtain the outcome "PAY, CONTINUE".

[8]. i.e. present behaviour that is based on future considerations.

Debt managers have no problems in understanding this ("PAY, CONTINUE") strategy. However, major debt management problems have included:

(i) a deficient policy framework and inappropriate institutional arrangements for controlling and managing debt;
(ii) non-adherence to the established legal framework;
(iii) lack of negotiating skills;
(iv) a weak analytical capacity; and
(v) lack of awareness of the implications of the debt crisis among politicians, government officials and policy makers.

All must understand that this is the optimal (pareto) and efficient point since both creditors and debtors will be better off if they play this strategy. There is no other inter-temporal optimal point of efficiency which is better than this point in the interest of all.

5.0 CONCLUSION AND POLICY IMPLICATIONS ON DEBT MANAGEMENT

Let us now examine a number of policy implications which are consistent with our debt crisis model and the game theory propounded above. Included are policy proposals reflecting international cooperation and various efforts to solve the current debt problems (of the 1990s) in developing countries (WDR, 1988). The purpose is to restore growth and sustainable economic development. Both internal as well external efforts are crucial. Starting with the internal problems our debt crisis model in section 3 suggests specific ways to achieve debt sustainability. These are:

- The improvement of economic performance through structural adjustment reforms, such that g becomes greater than r;[9] These include democratic, financial, fiscal, monetary, trade and parastatal sector reforms.

- The reduction of the present levels of debt to the optimum (minimum) levels and if possible, the complete cancellation of outstanding debts for a number of LDCs; and

- The design of appropriate domestic policies and structural measures in the debt countries to result in the renewed growth desired.

However, for severely indebted countries, this a tricky question, and can be likened to the "egg and chicken case"[10] and therefore the international community has to be held responsible. The international debt policy objectives should reflect that responsibility.

5.1 The Debt Policy Objectives

From the above, the debt policy objectives should be:

- The reduction of present levels of debt to optimum (minimum) levels and if possible, the complete cancellation of debt to a number of LDCs.

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[9]. Once the reforms are in order, our model assumes that debt reduction (a lower $w(t)$) is possible thereafter; as a result, additional inflows of capital will not be problematic (World Bank, 1994).

[10]. The case of the universal question: "What came first; the egg or the chicken?"

- The design of appropriate domestic policies and structural measures within the indebted countries in order to obtain renewed growth as desired.

5.2 The Debt Policy Strategies

The debt policy strategies recommended include:

- Increased lending by both bilateral and multilateral development institutions (governments, non-governmental organizations and banks) in support of growth-oriented structure adjustment programmes.

- Increased lending by commercial banks and the reduction of the real interest rate to the desired level i.e. to a level that is sufficient to stimulate the demand for capital in developing countries.

- The existence of policies (in industrialized countries) aimed at stimulating the growth rate and keeping markets open to LDC exports.

The above strategic solutions are more political in nature than mere strategies of the economic market. Obviously, these strategies are under the control of the developed industrialized countries. There is a need for frequent and constructive debt negotiations initiated and realized by these countries so as to correct the fundamental problems in the world economy (such as the Paris Club, the London Club, NORDIC, OECD, OPEC, World Bank, the IMF, UN and the Toronto 1988 meetings and negotiations).

On the domestic front, in order to have an effective mechanism for managing external debt, there is a need for a proper institutional framework for the contracting, recording, and monitoring of the external debt as necessary. First and foremost, proper institutional arrangements along these lines will require the improved coordination of procedures used in approving new borrowing, which is to be based on clearly spelt-out criteria. It is also important to ensure that debts are serviced automatically through the tightening and monitoring of the utilization and servicing of external loans. It is important that there be a balanced development of the public sector such that its growth, over time, should not burden development in other sectors. There is a need to take appropriate domestic measures and establish structural policies in all economic sectors so that renewed growth is obtained as desired.

If the above policies are realized, that will benefit both the developing and developed countries. The established linkages (between debt conditions and the process of international capital movements) will operate to the advantage of both the creditors and debtors.

LITERATURE

Agenor, P. R. and P. J. Montiel. 1996. "Development Macroeconomics". Princeton University Press: Princeton, New Jersey.

Dornbusch, R. 1983. Policy and Performance Links between LDC Debtor and Industrial Nations. A Brookings Paper.

Friedman, J. 1986. *Game Theory with Applications to Economics.* Oxford University Press: UK.

Holsea, J. A. 1979. "Notes on LDC Debt Problems". *World Development*. Vol. 7. New York.

Hossein, A. 1991. "Third World Debt and Financial Innovation. The Experience of Chile and Mexico". OECD Development Centre: Paris.

Hughes, H. 1979. "Debt and Development: The Role of Foreign Capital in Economic Growth". *World Development* Vol. 7 No. 2. New York.

Johansen, L. 1969. *Artikler om økonomisk vekst,* Oslo.

Kalderen, L. 1988. "How to Improve Debt Management". A SIDA Report. Stockholm.

Kilindo, A. A. L. 1993. "The Budget Perfomance and Foreign Indebtedness in Tanzania". In Bagachwa and A V. Y. Mbelle. 1993. *Economic Policy Under Multi-Party System in Tanzania*. DUP: Dar es Salaam.

Krumm, K. L., 1985. "External Debt of the Sub-Saharan Africa; Origins, Magnitude and Implications for Action". *World Bank Staff Working Papers.* No. 471. July.

Lipumba, N. I., and P. Noni. 1993. "Foreign Debt Management and Economic Growth in Tanzania". AERC paper. Nairobi.

Mistry, P. 1988. "The Case of Debt Relief: Recovery in Africa". A Sida Report. Stockholm.

Mistry, P. 1991. "African Debt Revisted, Procrastination or Progress?". FONDAD: The Hague, The Netherlands.

Mjema, G. D. 1994. "External Debt in Tanzania, Past Trend and Future Prospects". Paper presented at a Workshop on Impact of SAPs in Tanzania. Sponsored by TEG/CARITAS, Dar es Salaam. 5-7 November.

Musgave, R. A. 1959. *The Theory of Public Finance*. New York.

Pinies, J. De. 1989. "Debt Sustainability and Over-Adjustment". World Development. Vol. 17, No.2. New York.

Sachs, J. 1989. "Introduction". In Jeffrey Sachs (Ed). *Developing Country Debt and the World Economy*. University of Chicago Press: Chicago.

Sander, P. and Dean, A. 1988. "The International Debt Situation and the Linkages between Developing Countries and the OECD Countries". Economic Reports. Paris.

SIDA. 1988. "Recovery Africa: The Challenges for Developing Countries in the 1990s". A SIDA Report. Stockholm.

Shao, F. I. 1995. "History and Politics of Debt in Tanzania." Paper presented at the Meeting of Tanzania's Debt Crisis organized by TANGO and AFRORAD at Kilimanjaro Hotel, Dar es Salaam, 27-28 April.

Sydster, K. 1987. *Matematisk Analyse*. University of Oslo: Oslo.

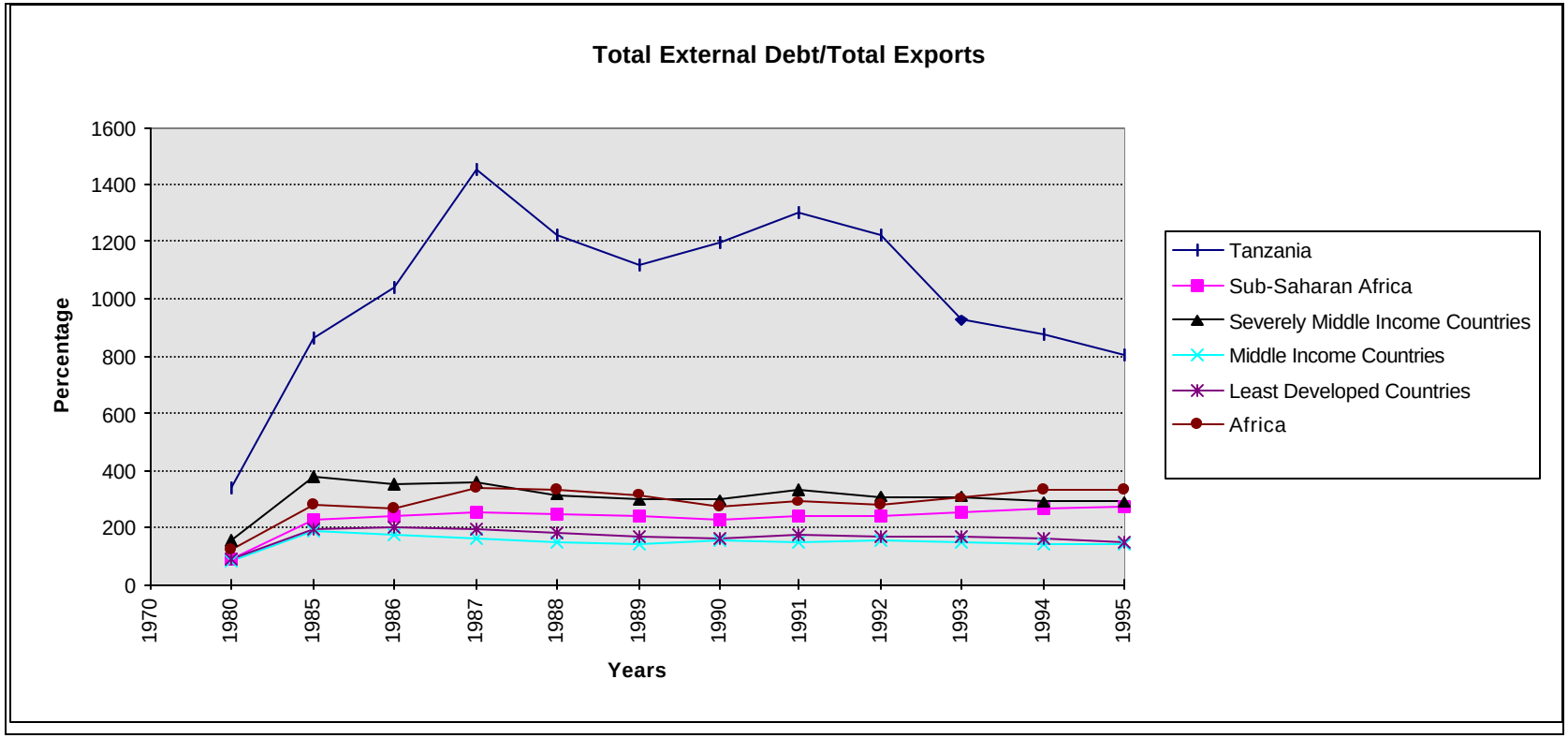
Taylor, A. B. 1989. "The Debt Problem of Sub-Saharan Africa". In *The European Journal of Development Research*, Vol. 1 No.2.

Tore, R. 1985. *Crisis and Recovery in Sub-Saharan Africa*. OECD Publications: Paris.

World Bank. 1994. *Reducing the Debt Burden of Poor Countries: A Framework for Action*. Washington D.C.

World Bank. 1985. "International Capital and Economic Development". In *World Development Report*. New York.

Total External Debt/Total Exports													
	1970	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Tanzania		343.4	859	1040.6	1449.9	1218.6	1115.9	1193.8	1305.9	1219	925.6	870.7	802.2
Sub-Saharan Africa		90.9	227.4	237.4	253.1	242.9	237.7	225.7	239.4	235.6	251.9	265.7	269.8
Severely Middle Income Countries		151.30	378.5	353	362.9	315.5	293.2	294.5	331.5	310.9	307.2	290.9	288
Middle Income Countries		84.5	183.7	175.6	158.5	147.7	141.3	156.9	150	152	149.2	141.1	139.7
Least Developed Countries		88.3	191.9	201.7	193.6	176.9	169.9	161.6	175.3	166.7	168.6	162.8	150
Africa		121	276.4	265.3	339	337	317	273	292	275	299	336	333


Total External Debt/Total Exports
Percentage
1600
1400
1200
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800
600
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200
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1970
1980
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1990
1991
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1993
1994
1995
Years
Tanzania
Sub-Saharan Africa
Severely Middle Income Countries
Middle Income Countries
Least Developed Countries
Africa

Total External Debt/Total Exports													
	1970	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Sub-Saharan Africa		90.9	227.4	237.4	253.1	242.9	237.7	225.7	239.4	235.6	251.9	265.7	269.8
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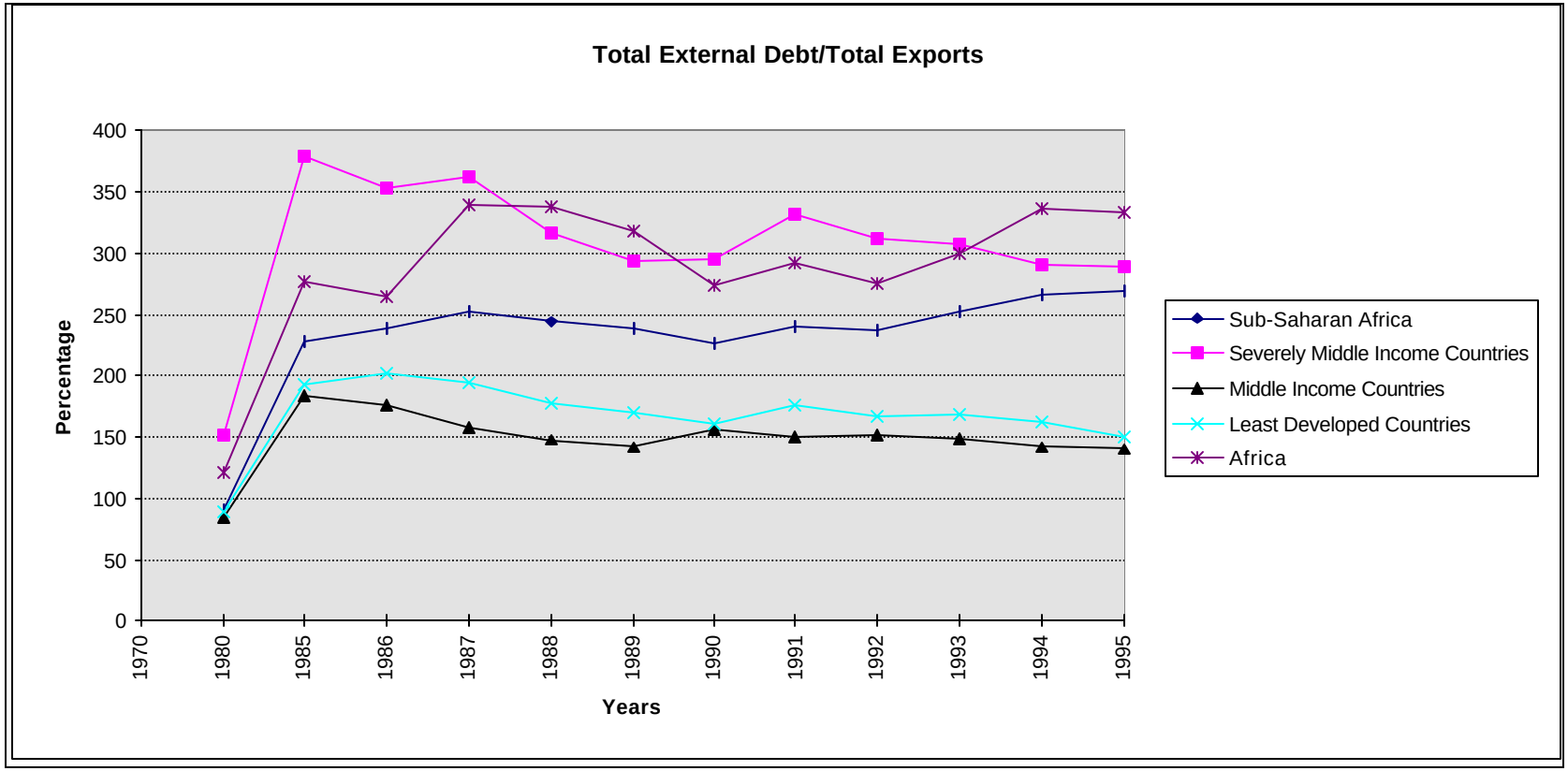
Least Developed Countries		88.3	191.9	201.7	193.6	176.9	169.9	161.6	175.3	166.7	168.6	162.8	150
Africa		121	276.4	265.30	339	337	317	273	292	275	299	336	332.6


Total External Debt/Total Exports
Percentage
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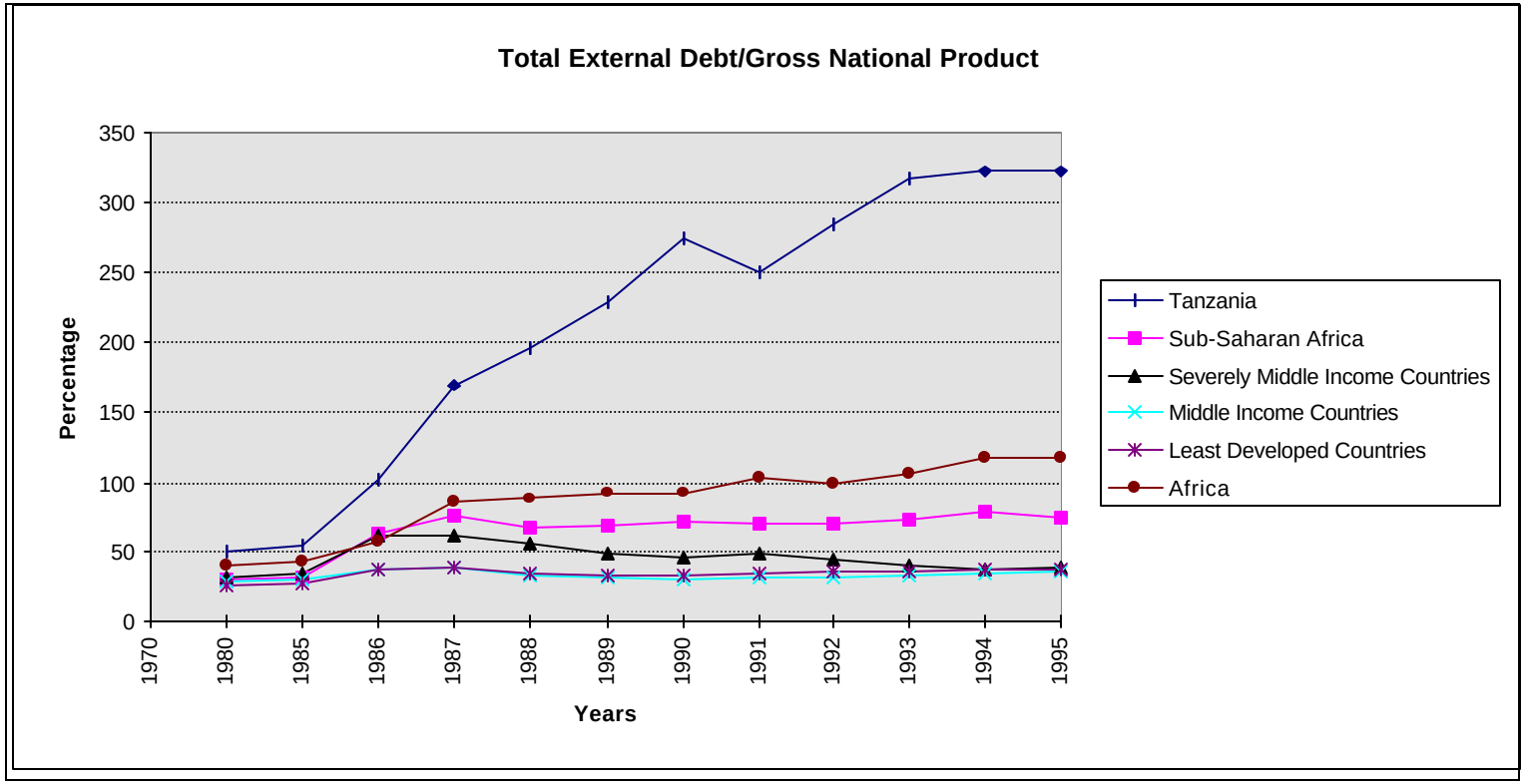
Years
Sub-Saharan Africa
Severely Middle Income Countries
Middle Income Countries
Least Developed Countries
Africa

Total External Debt/Gross National Product													
	1970	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Tanzania		51	54.6	102.9	168.8	196.2	227.8	275	250.2	284.1	316.8	321.9	322.7
Sub-Saharan Africa		30.6	32.76	63.5	75.2	67.2	69.1	70.8	70.6	69.8	73.2	78.7	74.1
Severely Middle Income Countries		32.5	34.8	62.3	61	55.8	49.5	46.5	49.3	45.4	41.3	37.7	39.3
Middle Income Countries		29.1	31.1	38	39.2	34.1	31.6	30.4	32.4	32.9	33.9	34.9	36.5
Least Developed Countries		26.5	28.3	37.6	39.6	35.1	33.9	33.2	35.2	35.7	37	37.6	37.7
Africa		40	43	57	86	88	92	92	103	99	106	117	117.3


Total External Debt/Gross National Product
Percentage
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150
100
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1970
1980
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Years
Tanzania
Sub-Saharan Africa
Severely Middle Income Countries
Middle Income Countries
Least Developed Countries
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	1970	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
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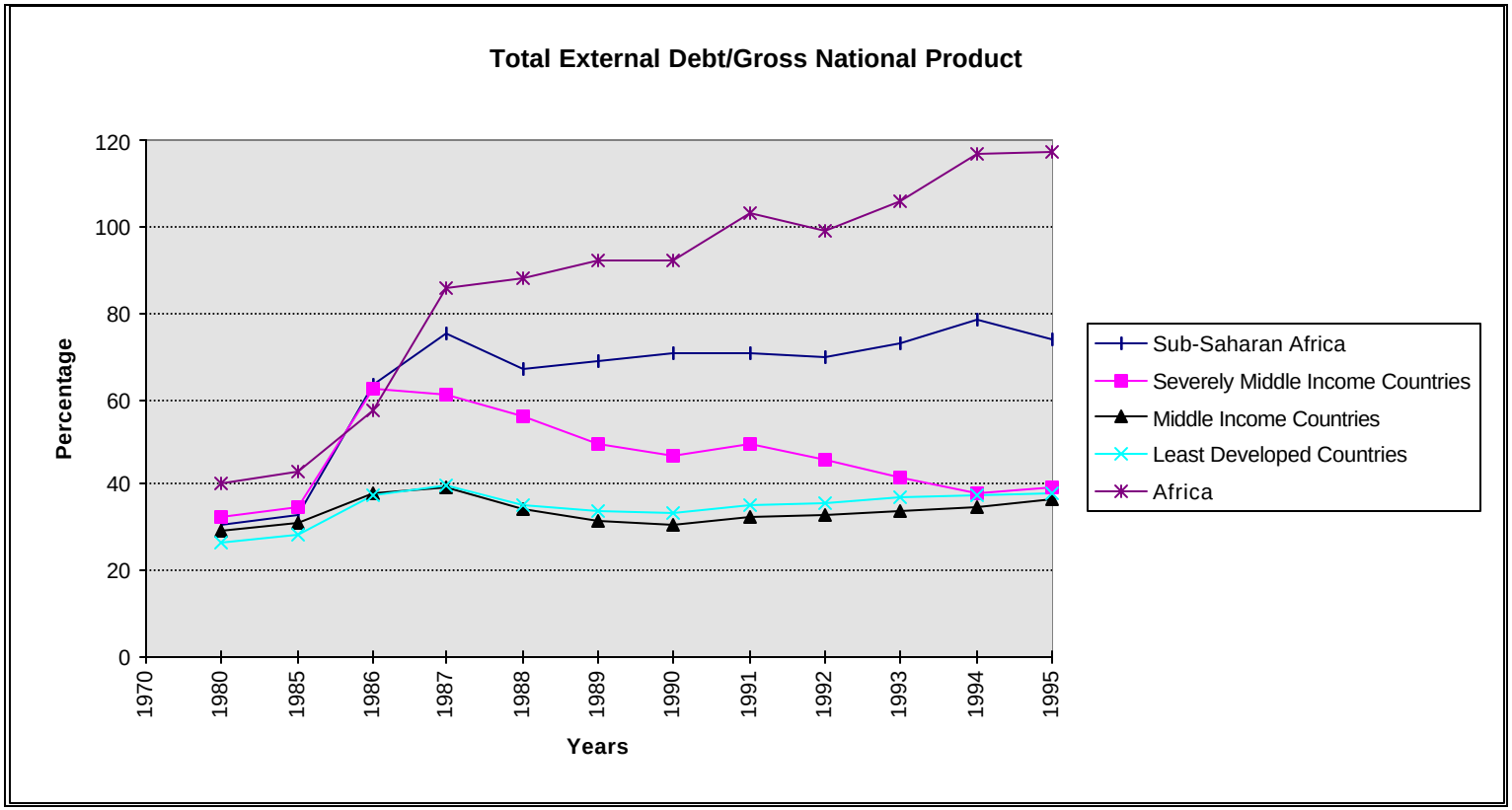
Middle Income Countries		29.1	31.1	38	39.2	34.1	31.6	30.4	32.4	32.9	33.9	34.9	36.5
Least Developed Countries		26.5	28.3	37.6	39.6	35.1	33.9	33.2	35.2	35.7	37	37.6	37.7
Africa		40	43	57	86	88	92	92	103	99	106	117	117.3



Total Debt Service/Total Exports													
	1970	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Tanzania		21.1	37.1	43	38.5	31.4	32.5	32.3	39.8	40.8	29.2	20.4	20
Sub-Saharan Africa		9.7	17.05	24.9	19.4	20.7	17.9	17.8	16.4	15.7	14.9	14	14.7

Severely Middle Income Countries		27.6	48.5	39.7	31.2	36.1	32.4	26.5	29.3	30.9	31.4	27.9	30.8
Middle Income Countries		13.8	24.4	26.1	24.5	23.6	20.4	18.1	18.7	17.3	18	17	16.6
Least Developed Countries		13.2	23.3	25.9	23.7	22.9	20.3	18.3	18.6	17.1	17.6	16.6	16.3
Africa		15	29	26.9	27	30	28	27	27	26	25	26	25.3

Total Debt Service/Total Exports													
	1970	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Sub-Saharan Africa		9.7	17.05	24.9	19.4	20.7	17.9	17.8	16.4	15.7	14.9	14	14.7
Severely Middle Income Countries		27.6	48.5	39.7	31.2	36.1	32.4	26.5	29.3	30.9	31.4	27.9	30.8
Middle Income Countries		13.8	24.4	26.1	24.5	23.6	20.4	18.1	18.7	17.3	18	17	16.6
Least Developed Countries		13.2	23.3	25.9	23.7	22.9	20.3	18.3	18.6	17.1	17.6	16.6	16.3
Africa		15	29	26.9	27	30	28	27	27	26	25	26	25.3